Drinking Water Technologies

The Water Infrastructure Improvements for the Nation Act requires EPA to provide information on the cost-effectiveness of innovative and alternative technologies for drinking water delivery systems (i.e., drinking water distribution systems), including wells and well systems (i.e., private wells). When selecting drinking water treatment systems, communities can consider a variety of options including:

- Maintaining or operating a centralized drinking water treatment facility.
- Purchasing water that may be delivered from a centralized drinking water facility.
- Installing local wells closer to residences that may be managed locally.
- Using Point-of-Use (POU) or Point-of-Entry (POE) treatment devices in homes. POU or POE devices can be a technically simpler treatment option for small systems.

Cities and town will need to select the best option that provides both safe water for their community but also is cost-effective. For some small systems, centralized treatment may be the only option to comply with EPA federal regulations. When applying treatment options, selecting the appropriate treatment technology options depends on a variety of factors including the chemistry and turbidity of the source water. For more information:

- Drinking Water Treatment
- Techonology Innovation
- Additional Resources

Additionally, water systems should consider Water System Partnerships to share treatment or operating costs. Learn more about Water System Partnerships.

For citizens that own their private well, there are a variety of actions that can be taken to test, protect and treat your water. Learn more about Private Wells. EPA does not regulate private wells nor does it provide recommended criteria or standards for individual wells. A public water system provides water for human consumption through pipes or other constructed conveyances to at least 15 service connections or serves an average of at least 25 people for at least 60 days a year.

Drinking Water Treatment

Drinking Water Treatability Database

The Drinking Water Treatability Database (TDB) presents referenced information on the control of contaminants in drinking water. It allows drinking water utilities, first responders to spills or emergencies, treatment process designers, research organizations, academicians, regulators and others to electronically access referenced information gathered from thousands of literature sources and assembled on EPA's website.

Removing Multiple Contaminants from Drinking Water

Public water systems that need to add treatment for one contaminant may find that they also have other water quality concerns. Choosing a treatment technology that can remove several co-occurring contaminants may be more efficient and

cost effective. This table describes treatment technologies that can remove multiple contaminants, identifies the contaminants that can be removed, and summarizes related operational and waste disposal issues.

- Removing Multiple Contaminants from Drinking Water: Issues to Consider (EPA 816-H-07-004)

Point of Use and Point of Entry Treatment Devices

POU and POE treatment devices rely on many of the same treatment technologies that have been used in central treatment plants. POU or POE treatment devices may be an option for PWSs where central treatment is not affordable.

- Point-of-Use or Point-of-Entry Treatment Options for Small Drinking Water Systems (EPA 815-R-06-010). This document outlines the technical, operational, and managerial issues involved in implementing a POU or POE treatment strategy. It describes the types of contaminants that can and cannot be treated with POU and POE devices and offers recommendations on how to select, install, operate, maintain, and monitor this equipment.
- Cost Evaluation of Point-of-Use and Point-of-Entry Treatment Units for Small Systems: Cost Estimating Tool and Users Guide Users Guide (EPA 815-B-07-001). The document provides a description of a costing tool developed to assist stakeholders with estimating costs for a centrally managed POU or POE strategy to comply with drinking water regulations.

Technology Innovation

Small Systems Innovation Research

Using funding from EPA's STAR grant program, two national research centers conduct research on innovative technologies that can be implemented in small systems. For more information click on below link.

- National Centers for Innovation in Small Drinking Water Systems

Cost Effectiveness of Innovative Technologies

EPA has developed Drinking Water Treatment Technology Unit Cost models that can help public water systems assess the cost effectiveness of these technologies . Each WBS engineering model contains a work breakdown for a particular treatment process. Engineering equations estimate equipment requirements given user-defined inputs such as design and average flow.

- Drinking Water Treatment Technology Unit Cost Models

Potable Water Reuse

The innovative process of using treated wastewater for drinking water is called potable water reuse. Potable water reuse provides another option for expanding a region's water resource portfolio. Potable Reuse Compendium provides a technical compilation of the current state of potable water reuse in the United States. The compendium covers multiple topics including the extent of potable water reuse in the United States and the world, the costs of potable water reuse, and the treatment processes used in potable water reuse. Additionally, the compendium presents seven case studies on indirect and direct potable reuse facilities in the United States, which illustrate how and why facilities implement potable water reuse.

- 2017 Potable Reuse Compendium

Additional Small System Resources

- Technical, Managerial and Financial (TMF) Capacity Resources for Small Drinking Water Systems
- Training and Technical Assistance for Small Systems Funding

- Drinking Water State Revolving Fund
- Water Infrastructure Finance and Innovation Act (WIFIA)
- Water Finance Clearinghouse
- Water Infrastructure and Resiliency Finance Center

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